

产品简介



Goptica SWIR series 400-1700nm is a short-wave infrared camera with SONY indium gallium arsenide chips and USB3 / GigE / 10G/CameraLink interfaces. It features high quantum efficiency and high sensitivity, and is suitable for a wide range of common SWIR applications in various industrial sub-sectors.

Application

- Semiconductor industry: Solar cell and chip testing
- Agriculture: Spectral remote sensing applications through multi-rotor aircraft
- Recycling industry: Material sorting of plastics, garbage and other materials
- Medical Imaging and Research: Hyperspectral and multispectral imaging
- Food industry: Quality inspection and grading
- Beverage industry: Liquid level detection in opaque containers
- Packaging: Sealing inspection
- Glass industry: Detection of high-temperature glass transparency defect
- Printing industry: Transparent hidden features
- Video surveillance: Visual enhancement (such as smoke perspective)
- Security: Counterfeit product detection, such as currency, wigs or skin

Basic Characteristic

- The 400-1700nm version adopts SONY SenSWIR indium gallium arsenide chip
- The resolution covers 5MP to 0.33MP
- Available in both cooled and uncooled versions
- Precise temperature control can achieve a temperature difference of 10 to 25 degrees Celsius lower than the ambient temperature
- A wide spectral response range of 400-1700nm
- 15um / 5um / 3.45um pixels
- Global shutter
- Multiple data interfaces such as USB3 / GigE / 10G/CameraLink/analog AV
- Up to 14-bit ADC
- 4Gb of memory
- Supports external IO trigger control
- A frame rate that exceeds the official parameters
- Support on-site firmware update
- Accept OEM customized development

SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMA

Model	SWIR1300KMA
Parameters	1.3-megapixel 1/2" CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 200fps@1280 x 1024、392fps@640 x 512 12 Bit: 108fps@1280 x 1024、209fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	44.3e/ADU
Dynamic Range	58.7dB
Readout noise	211e
Full well charge	181.6ke
Maximum Signal-to-Noise Ratio	52.6dB
Sensitivity	121mV
Dark Current	383e/s(0°C) 510e/s(10°C) 638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 25°C
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered / 12V power adapter powered
Power consumption	<2.1W (non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	80mm X 80mm X 45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMA-G

Model	SWIR1300KMA-G
Parameters	1.3-megapixel 1/2" CMOS GigE Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 90fps@1280 x 1024、253fps@640 x 512 12 Bit: 45fps@1280 x 1024、135fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	44.3e/ADU
Dynamic Range	58.7dB
Readout noise	211e
Full well charge	181.6ke
Maximum Signal-to-Noise Ratio	52.6dB
Sensitivity	121mV
Dark Current	383e/s(0°C) 510e/s(10°C) 638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 25°C
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	12V power adapter powered
Power consumption	<2.1W (non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	80mm X 80mm X 45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMA-CL200

Model	SWIR1300KMA-CL200
Parameters	1.3-megapixel 1/2" CMOS CameraLink Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 200fps@1280 x 1024、392fps@640 x 512 12 Bit: 108fps@1280 x 1024、209fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	44.3e/ADU
Dynamic Range	58.7dB
Readout noise	211e
Full well charge	181.6ke
Maximum Signal-to-Noise Ratio	52.6dB
Sensitivity	121mV
Dark Current	383e/s(0°C) 510e/s(10°C) 638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	no support
Data interface	CameraLink
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 25°C
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	12V power adapter powered
Power consumption	<2.1W (non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	75mm X 75mm X 81.9mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMB

Model	SWIR1300KMB
Parameters	1.3-megapixel 1/2" CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABJ-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 200fps@1280 x 1024、392fps@640 x 512 12 Bit: 108fps@1280 x 1024、209fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	42.8e/ADU
Dynamic Range	58.7dB
Readout noise	197.6e
Full well charge	175.4ke
Maximum Signal-to-Noise Ratio	52.4dB
Sensitivity	121mV
Dark Current	638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 10°C
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered / 12V power adapter powered
Power consumption	<2.1W (non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	80mm×80mm×45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMB-G

Model	SWIR1300KMB-G
Parameters	1.3-megapixel 1/2" CMOS GigE Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABJ-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 90fps@1280 x 1024、253fps@640 x 512 12 Bit: 45fps@1280 x 1024、135fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	42.8e/ADU
Dynamic Range	58.7dB
Readout noise	197.6e
Full well charge	175.4ke
Maximum Signal-to-Noise Ratio	52.4dB
Sensitivity	121mV
Dark Current	638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	GigE
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 10°C
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	12V power adapter powered
Power consumption	<2.1W (non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	80mm×80mm×45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

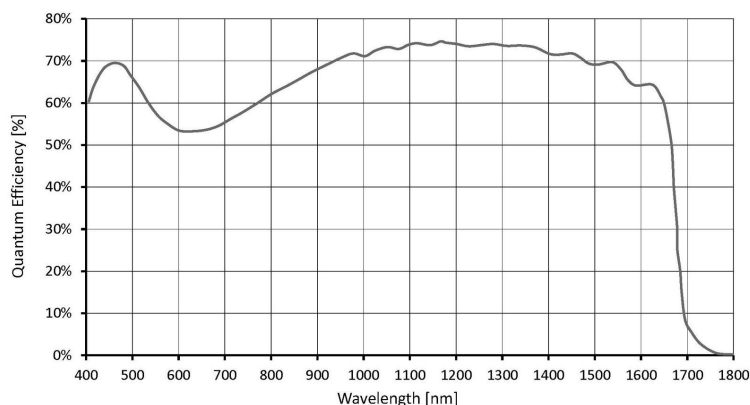
SWIR 400–1700 1.3MP 5um IMX990

SWIR1300KMB-UMV

Model	SWIR1300KMB-UMV
Parameters	1.3-megapixel 1/2" CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX990-AABJ-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	5.0 μm x 5.0 μm
Target size	1/2"
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit: 223fps@1280 x 1024、428fps@640 x 512 12 Bit: 118.7fps@1280 x 1024、227.7fps@640 x 512
Hardware Image Buffer	512MByte
Conversion Gain	42.8e/ADU
Dynamic Range	58.7dB
Readout noise	197.6e
Full well charge	175.4ke
Maximum Signal-to-Noise Ratio	52.4dB
Sensitivity	121mV
Dark Current	638e/s(20°C)
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Filter	400-1800nm (standard) ; 1030-1800nm (optional)
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered
Power consumption	<2.11W
Temperature	Operating temperature -20~60°C, storage temperature -40~85°C
Humidity	20%-80%, no condensation
Dimensions	33mm × 33mm × 38mm
Weight	70g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE, FCC

SWIR 400–1700 1.3MP 5um IMX990

The QE curve of IMX990



Absolute quantum efficiency of IM992

Performance Parameters of IMX990 Camera

The performance parameters of the camera are as follows :

- Maximum resolution
- RAW 12-bit mode
- Temperature: 5°C
- HCG

Performance parameters of SWR1300KMA camera

Gain Value	100	125	158	199	251	316	398	501	603	794	1000	1258	1500
Rel Gain (dB)	0.00	1.91	3.93	5.94	7.94	9.96	11.99	14.05	16.07	18.10	20.15	22.07	23.70
e-/ADU	44.32	35.56	28.21	22.37	17.76	14.08	11.15	8.79	6.97	5.52	4.36	3.49	2.90
Read Noise (e-)	210.89	209.29	209.71	208.16	207.64	205.12	203.76	202.01	199.78	197.93	198.65	198.47	198.65
Full Well (ke-)	181.55	145.64	115.53	91.64	72.76	57.68	45.68	36.02	28.55	22.60	17.85	14.30	11.86
DR (stop)	9.75	9.44	9.11	8.78	8.45	8.14	7.81	7.48	7.16	6.84	6.49	6.17	5.90

Performance parameters of SWR1300KMB camera

Gain Value	100	125	158	199	251	316	398	501	603	794	1000	1258	1500
Rel Gain (dB)	0.00	1.25	1.57	1.97	2.47	3.12	3.91	4.92	6.20	7.77	9.72	11.94	14.32
e-/ADU	42.82	34.37	27.32	21.75	17.31	13.73	10.95	8.71	6.91	5.51	4.40	3.59	2.99
Read Noise (e-)	197.63	196.91	195.76	198.17	195.23	195.78	195.14	196.15	193.04	195.82	203.27	208.32	208.36
Full Well (ke-)	175.41	140.77	111.90	89.07	70.90	56.25	44.84	35.67	28.30	22.57	18.04	14.69	12.25
DR (stop)	9.79	9.48	9.16	8.81	8.50	8.17	7.84	7.51	7.20	6.85	6.47	6.14	5.88